CONTEXT AND DIRECT DATING OF PRE-EUROPEAN LIVESTOCK IN THE UPPER SEACOW RIVER VALLEY

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(With 8 figures and 1 table)

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ABSTRACT

The stratigraphic positions of a small group of sheep and cattle remains from two rock shelters in the Richmond District, Upper Karoo, are evaluated. A cluster of 10 specimens in Haaskraal Shelter appears to be reliably positioned below a layer of historical livestock remains left by farm Bushmen and later occupants. Two of the deepest specimens were used for direct radiocarbon dating by the accelerator method, with the goal of resolving conflicting charcoal dates (1200–1100 BP or 500–600 BP) for the introduction of livestock. The AMS dates support the younger age range. The uppermost livestock specimen in the cluster indicates when last indigenous livestock were present near the shelter before the European invasion. A thin, livestock-free layer intervenes between the top of the cluster and the base of the historical layer. The interval is too short and the date too recent for AMS dating to be applied. None the less, the narrow gap supports historic sources that suggest that the Bushmen once owned livestock, but were dispossessed before the Europeans arrived.

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INTRODUCTION

When Dutch trekboers first introduced sheep and cattle into the Sneeuberg headwaters of the Seacow River valley (Fig. 1) in the early 1770s, their stock was systematically destroyed or stolen by resident Bushmen (Godée-Molsbergen 1932: 39; Moodie 1960 III: 43, 44, 46, 52, 53, 67, 103; Raper & Boucher 1988: 82, 96, 180). The first five farmsteads (South African State Archives 1770–1774) were repeatedly abandoned during the war for possession of the Sneeuberg, which dragged on into the 1790s, after which an uneasy truce prevailed. Throughout this episode, eyewitness reports of Bushmen with livestock all assume that the animals were stolen from trekboers. Thus, by all accounts, the upper Seacow River valley Bushmen were without livestock of their own at the time when their territories were invaded. However, the world view of those writing these accounts can be called into question. There is certainly no mention of Hottentots (Khoi) in the valley, with or without livestock, at this time.

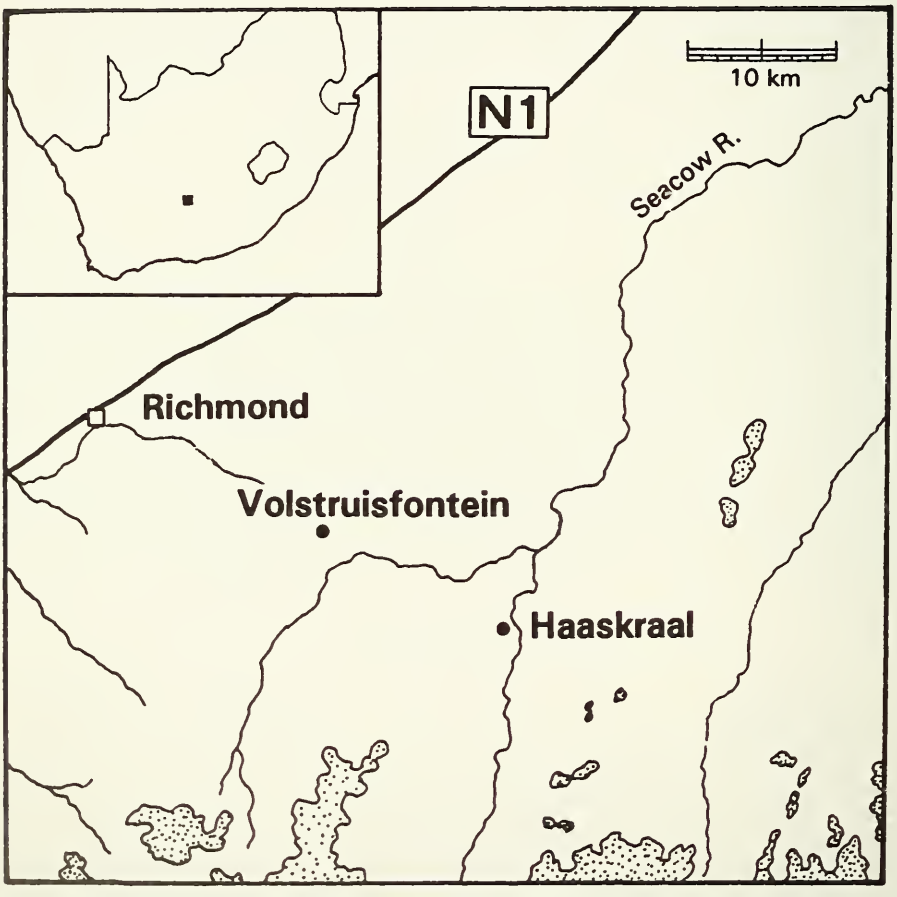

Fig. 1. The location of two excavated rock shelters in the headwaters of the Seacow River, showing northern outliers of the Sneeuberg Mountains (stippled area).

The truce remained tense. Although in 1797 there was a small farming settlement in the middle of the valley (Barrow 1806: 253–254), by the turn of the century there were still only five farms (Van der Merwe 1937: 115). Following the Macartney Proclamation of 1798, which ordered that *ad hoc* commandos against the Bushmen be replaced by efforts to resettle and 'civilize' them (Moodie 1960 III: 115), a few more trekboers entered the upper valley (Godée-Molsbergen 1916: 186; De Kock 1965: 260). This peace-making initiative was so effective that a minor land rush took place between 1800 and 1810. All the best springs were taken, but resident Bushmen were allowed to camp nearby, and the farmers supplied them with gifts and food (Hutton 1887: 39; Moodie 1960 V: 24).

Farm servants were recruited out of this new symbiosis, during which it was quickly observed that certain Bushmen were skilled shepherds who knew where the best grazing was to be had beyond the limits of the farm boundary. By 1809, Colonel Collins' party had no qualms in allowing 20 strange Bushmen, whose camp they were passing, to take 'charge of our sheep and spare teams; a trust often reposed in that people by farmers, and which they have never been known to abuse' (Moodie 1960 III: 35).

Many shepherds wishing to build their own herds were encouraged to do so by gifts and through part-payment for their labour, at a rate of four sheep and one cow per year. Backhouse (1844: 341) was also told of a Bushman shepherd who, during 30 years' service, built up a herd worth more than £1 000. Short-lived (1814–1817) Bushman mission stations in the lower Seacow River valley also promoted animal husbandry (Gutsche 1968: 30, 34) and the resulting Bushman pastoralists grazed their stock in the same vicinity for some years after the missions were forced to close (Campbell 1822: 31; Melvill 1825).

The apparent ease, speed and skill with which some upper Seacow River Bushmen were converted from hunter-gatherers (and former stock thieves) into pastoralists, begs the question whether they had possessed livestock before the coming of the Europeans. When an archaeological survey of the upper valley revealed the presence of hundreds of low, stone-walled kraals (Sampson 1984) of a design similar to those of modern Nama pastoralists, this question was only partly (and imperfectly) answered. Whereas the design and layout of the kraals suggested ancestral Khoi herders to be the most likely agents, surface pottery found in many of them included not only typical Khoi ceramics but also the stamp-impressed fibre-tempered wares traditionally attributed to Karoo Bushmen.

After several stratified rock shelter fills were excavated, it appeared that both Khoi and undecorated fibre-tempered wares were introduced into the upper valley as long ago as 1200–1100 radiocarbon years BP. At Haaskraal (Fig. 1), both types were found in the base of the fill that had dammed up behind a kraal wall built on the talus slope of a rock shelter (Fig. 2). This evidence strongly supports the proposition that the agents who introduced both kinds of pottery to the upper valley were also the wall builders and, by implication, ancestral Khoi herders (Hart 1989).

The Khoi pottery, never abundant in any of the excavated shelter fills, apparently disappeared from the upper valley about 300 years ago, after which only the decorated fibre-tempered wares were made (Sampson *et al.* 1989).

Three scenarios might explain this observation: (a) the Khoi herders departed with their livestock, leaving behind partly acculturated hunter-foragers with enough skills to make fibre-tempered pottery; (b) ditto, but the acculturated residents were left with small flocks of their own; or (c) the Khoi lost all their stock and abandoned Khoi vessel-making as a craft because there was no further need for it, i.e. no milk storage. Dispossessed of their herds, they became 'Bushmen-Hottentots' as many eighteenth-century writers called the valley residents. The archaeological consequences of scenarios (a) and (c) would be that no stone kraal was in use after about 300 years ago. The upshot of scenario (b) might be that some stone kraals continued in use by herders who only made decorated fibre-tempered pottery. Each scenario sounds too trite, and the reality was probably a messy combination of all three processes. If so, it will be extremely difficult to recognize in the archaeological record.

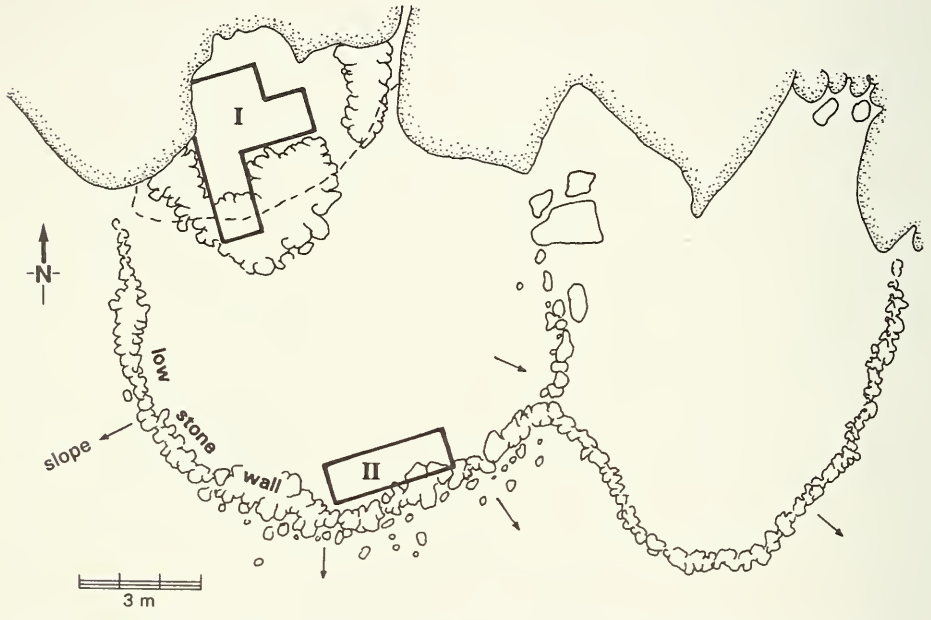

Fig. 2. Haaskraal: excavations (thick line) were conducted (area I) under the shelter drip line (dashed line) through collapsed historical walling, and immediately behind the prehistoric kraal wall on the talus slope (area II).

Ultimately, the best proof that indigenous livestock was still present in the upper valley when the trekboers arrived will come from neither pots nor kraals, but from the physical remains of the animals themselves. To this end, we have plotted the provenances of all recovered fragments of domestic fauna from nine excavated rock shelters in the upper valley. The overwhelming majority of these (often abundant) remains occur in the upper levels of each shelter fill, in firm association with European artefacts. Whereas the European-derived livestock remains tell a fascinating story of their own (Voigt *et al.* in prep.), it is the much rarer pre-European specimens that are the focus of this study.

Five shelters contained no trace of pre-European livestock and two others, with many European livestock and artefacts, also have livestock at depth. However, they also have European artefacts thrust down into the crucial levels. Consequently, the context of each case is compromised and the deeper *Ovis/Capra* remains may originate in the historical levels above.

These shelters all occur on the east and north-central flanks of the upper Seacow River valley (Sampson *et al.* 1989: 3, fig. 1), where stone kraals were originally thought to be absent (Sampson 1985) but are now known to be present in very low numbers (Hart 1989: 99–100). It follows that the likelihood of recovering domestic livestock from shelters in the east and north-central areas would be quite low, as events have shown.

However, two more shelters on the west side of the valley, Volstruisfontein and Haaskraal (Fig. 1), are in the vicinity of literally hundreds of kraals, and Haaskraal is itself associated with two of them (Fig. 2). As expected, both produced rare traces of pre-European livestock. Conflicting dates (1200–1100 BP or 500–600 BP) for the lowermost specimens were achieved by conventional dating of associated charcoal (Hart 1989: 158). As a first step towards selecting livestock specimens for direct dating by accelerator, a detailed contextual evaluation follows.

Henceforth, the term 'Contact' will be used to denote the European appearance in the archaeological record, following conventional usage in North American historical archaeology. Thus, livestock derived from trekboer sources are post-Contact, and specimens predating the European arrival are pre-Contact.

VOLSTRUISFONTEIN SHELTER

Typical of most other shelter fills in this region, Volstruisfontein is shallow, stony, leached, devoid of visible stratigraphy and disturbed by burrows. These disadvantages are offset by very high yields of artefacts and fauna per unit volume of matrix. Such yields repay the rigorous excavation and recording procedures applied to them (Sampson *et al.* 1989: 7). The Volstruisfontein sequence nicely exemplifies the problems that arise when trying to validate the presence of pre-European livestock in such deposits. It also serves as an introduction to the procedures used in the evaluation of their contexts.

A composite section of the 1 m × 3 m trench is given in Figure 3A and shows the Contact horizon as defined by projected positions of various European items (Saitowitz & Sampson 1992; Crass & Sampson 1993*a*, 1993*b*; Moir & Sampson 1993; Westbury & Sampson 1993) and their associated livestock remains. Clearly positioned below this line are four 25 cm × 25 cm × 2.5 cm excavation units (blocks), all near the rear of the shelter, that contain livestock remains. The deepest is a lower left mandible fragment of *Ovis/Capra*; above this is a distal second phalanx of *Ovis aries*; at the same level and slightly forward in the fill is a right radius shaft fragment of *O. aries*; still farther forward and at the same level is the proximal third phalanx fragment of *Ovis/Capra*. The mandible fragment is at exactly the level of the lowermost Khoi and plain fibre-tempered (GTPW) sherds, and of the block with charcoal dated to 560 ± 170 BP (SMU–1791). The upper set of three specimens is still within the

narrow band of Khoi and 'intermediate' sherds with minimum fibre and coarse inclusions (MFCI sherds). On the face of it, this appears to be a straightforward situation with little room for doubt, except for a few crucial details. Firstly, the *Ovis/Capra* remains are concentrated at the rear of the shelter, whereas the pottery is widely distributed. This cannot be ascribed to poor bone preservation at the front because there is a dense lens of non-domestic fauna at this level in the front (Plug & Sampson in prep.). Also, there are irregularities in the Contact horizon, and two MFCI sherds in the post-Contact levels hint at upward churning.

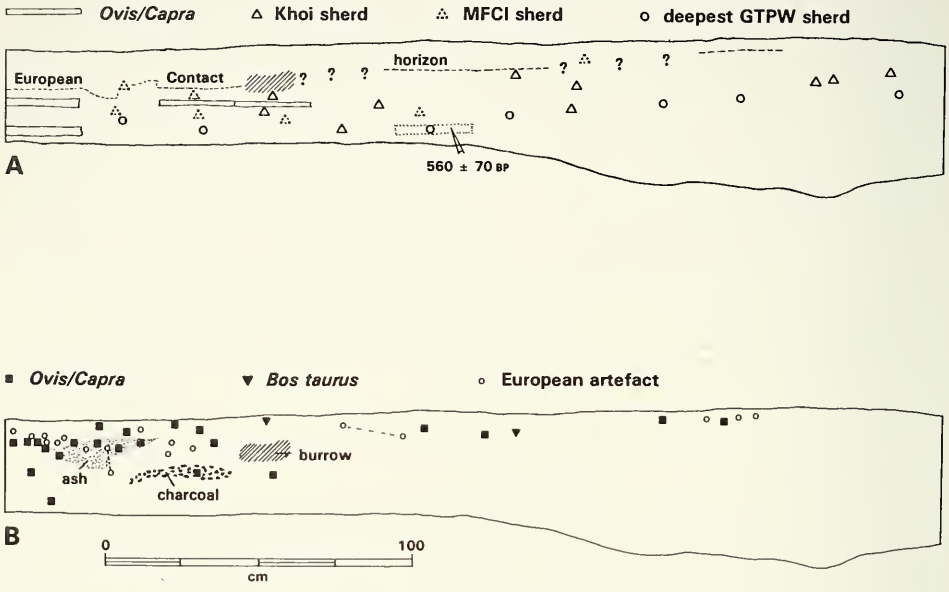

Fig. 3. Volstruisfontein Shelter: composite sections of the 1-m-wide trench cut from back (left) to front (right) of the deposit. A. The positions of pre-Contact livestock remains relative to selected pot sherds and one dated charcoal sample. MFCI = minimum fibre, coarse inclusions; GTPW = grass-tempered plain ware. B. The positions of all livestock remains relative to recorded features and European artefacts.

When the positions of all European items and livestock are projected on to the same composite section (Fig. 3B), together with features recorded on one face of the trench (Hart 1989: 157), the integrity of the upper three purported pre-Contact *Ovis/Capra* specimens is put in doubt. A small, ash-filled pit was dug (probably for making lead grapeshot) into the pre-Contact levels. Worked into the ash were two crumb-size, burned fragments of a teapot lid, joined by dashed lines in Figure 3B, that match with two others found farther forward in the shelter, also joined by dashed lines. The lowermost crumb is at the same level as the three crucial bones, and the pit was dug from the surface where the most European livestock remains occur. One face of the excavation trench revealed a burrow void right at the Contact line. Although the charcoal lens to the lower left of this could be a hearth, these features also occur as floor linings

to burrows at Blydefontein Shelter, a unique deposit where burrow fills can be distinguished from the surrounding matrix (Bousman 1990: 153). The doubt cast on the upper set of three *Ovis/Capra* by this halo of minor disturbances and suspicious features must inevitably infect the integrity of the lowermost mandible fragment which, although itself in an apparently untroubled situation, is too close to the others to be very reassuring. Overall, it must be viewed as a high-risk sample in which to invest an accelerator date.

HAASKRAAL SHELTER

The matrix of the Haaskraal Shelter fill is decomposed dolerite. It is relatively stone free, very dark in colour and has no visible stratigraphy. Not even interfaces between matrix and contained features can be seen during excavation, but thin separations appear after standing sections are allowed to dry out (Hart 1989: 129–130). Variable slope configurations and excavation outlines (Fig. 2) make it necessary to present five different composite sections at this site (Fig. 4). Section A covers the back two metre squares of the excavation; section B covers the middle of the deposit behind the drip line; section C is perpendicular to the other two and combines the front-to-back, metre-wide trench that was cut through the collapsed (historical) wall at the drip line (Fig. 2); section D combines the upslope half of the trench cut into the fill behind the kraal wall; and section E covers the downslope half of the same trench, flush with the kraal wall itself.

When the positions of blocks containing livestock remains are projected on to all these sections, together with the positions of European artefacts, they correlate to form a well-defined and almost continuous Contact horizon within the shelter (Fig. 5A–C, base of light stipple), but not behind the kraal wall (Fig. 5D, E) where there are no European artefacts. It follows that correlations between the shelter and talus units remain somewhat tentative.

Altogether 14 specimens occur in the shelter's pre-Contact levels, but there is only one at the appropriate depth in the steeply sloping deposits behind the kraal wall. The distribution by taxon and element of the apparently pre-Contact remains is given in Table 1. There is a well-defined spatial grouping projected on the section in Fig. 5B, but they appear as scattered occurrences on the other projections.

DISTRIBUTION OF LIVESTOCK WITHIN BONE MIDDENS

In Figure 6, the post-Contact specimens (open circles) include proportionally more cattle than were found at Volstruisfontein. Because Haaskraal overlooks a historical cattle post at the foot of the talus slope, this is the most likely source. The relative paucity of livestock remains in the fill behind the kraal wall can be ascribed to lower overall bone densities in the rocky, unprotected deposit. This does not help to explain why cattle remains are relatively more numerous than sheep behind the kraal wall. Usually, cattle remains, although larger, are at greater risk of disintegration, so they should be scarcer.

By projecting those blocks with the highest bone densities (g per 1.8 litre block) of unsorted fauna on to each section, it becomes possible to define the

outlines of separate bone middens, not otherwise visible in the stratigraphy. These middens are composed mainly of non-domestic fauna. The clearest projection (Fig. 6C) reveals a sequence of two pre-Contact faunal middens followed by a thick, possibly two-phase post-Contact midden. These separations are visible but less clearly defined in the other two shelter sections (Fig. 6A, B); however, the talus slope displays only thin, patchy bone distribution, where pockets and lenses of fauna are concentrated between boulders in the talus fill (Fig. 6D, E).

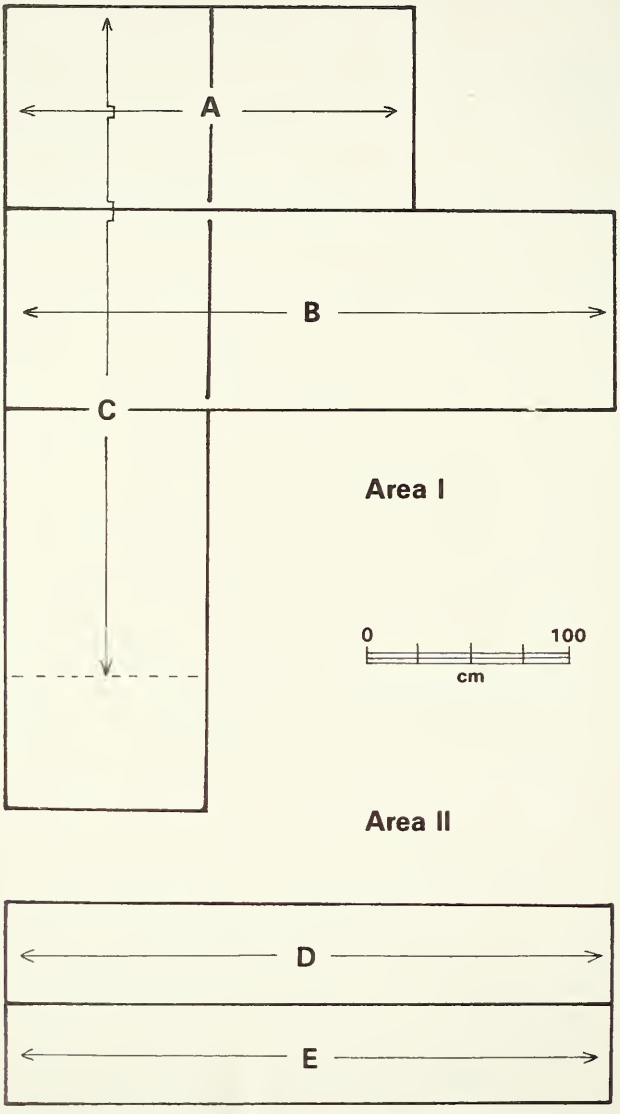

Fig. 4. Haaskraal Shelter and talus: layout of composite sections shown in Figures 5–8.

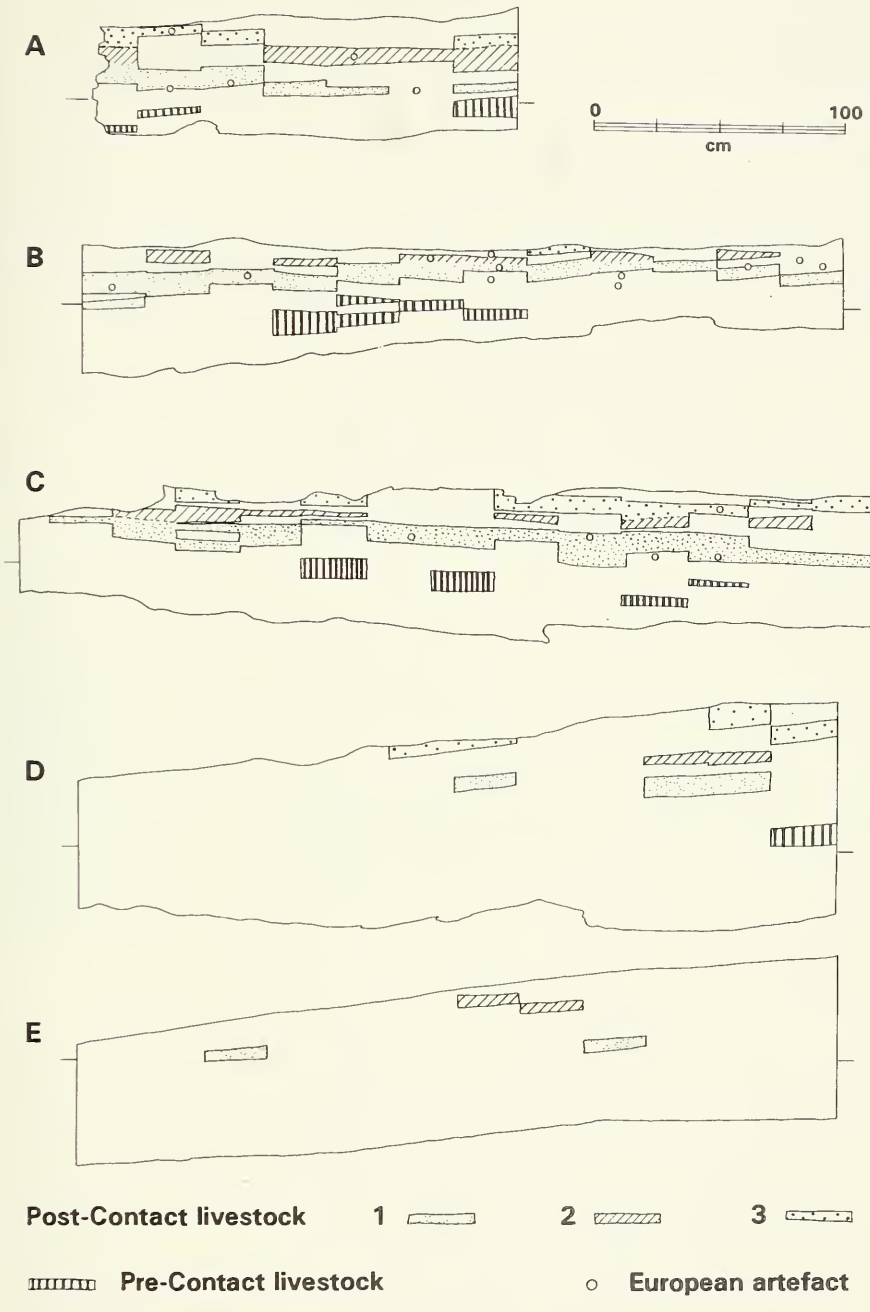

Fig. 5. Haaskraal Shelter and talus: composite sections showing positions of livestock relative to European artefacts. Correlation indicates one pre-Contact and three post-Contact layers of livestock.

TABLE 1.
Livestock fragments from pre-Contact levels at Haaskraal.

Square-block/ spit	Species	Element	Wear class/Age
A–14/10	*Ovis aries*	Right distal humerus	Adult
A–11/8	*Ovis aries*	Second phalanx	Adult
E–12/8**	*Ovis aries*	Right third phalanx	Adult
F–5/5*	*Ovis aries*	Pelvis, pubis fragment	Adult
F–6/6*	*Ovis aries*	Right talus	Adult
F–9/7*	*Ovis aries*	Right premaxilla fragment	Adult
F–15/7*	*Ovis aries*	First phalanx, proximal fragment	Adult
I–3/7*	*Ovis aries*	Second phalanx, proximal fragment	Adult
I–3/7*	*Ovis aries*	Calcaneum, unfused	Neonate/Juvenile
B–4/9	*Ovis/Capra*	Left lower second molar	V
B–8/8	*Ovis/Capra*	Left lower first incisor	V
E–12/7*	*Bos taurus*	Second phalanx, proximal fragment	Adult
E–12/8**	*Bos taurus*	Left lower second premolar	VII
I–1/8*	*Bos taurus*	First phalanx, distal fragment	Adult
O–8/9 (wall)	*Bos taurus*	Vertebra fragment	Adult

*—apparently sound context
**—selected for AMS dating

Of the 15 pre-Contact specimens (Table 1), 10 are embedded in blocks with relatively high densities of other fauna. Whereas the four specimens towards the rear of the shelter (Fig. 6A, C) occur at the same level as the pre-Contact middens, they are surrounded only by small splinters of bone and tooth enamel. The contrast between their own whole, relatively undamaged condition and that of their few, highly fragmented associations is striking. This raises the possibility that they were thrust down from the overlying post-Contact levels, where livestock specimens are in a comparably undamaged condition. A similar question hangs over the solitary pre-Contact specimen from just above the lower midden in Figure 6B.

DISTRIBUTION OF LIVESTOCK BELOW POST-CONTACT SPECIMENS

Unlike Volstruisfontein, there are no intrusive European artefacts at the back of Haaskraal Shelter to serve as an independent cross-check of the churning hypothesis, nor are there any visible signs of disturbance in this 'black-box' deposit. If, however, the five suspect specimens occur immediately below dense, deep areas of post-Contact livestock, this will strengthen the case for their hypothetical downward intrusion from the upper levels.

Figure 7A shows the horizontal distribution of post-Contact livestock to be patchy, with a diagonal line of small concentrations running from the rear right to the front left of the excavation. One very high concentration (40 specimens) suggests a small, localized bone dump. The pre-Contact specimens (solid circles) form a central cluster separated from three outliers at the rear of the

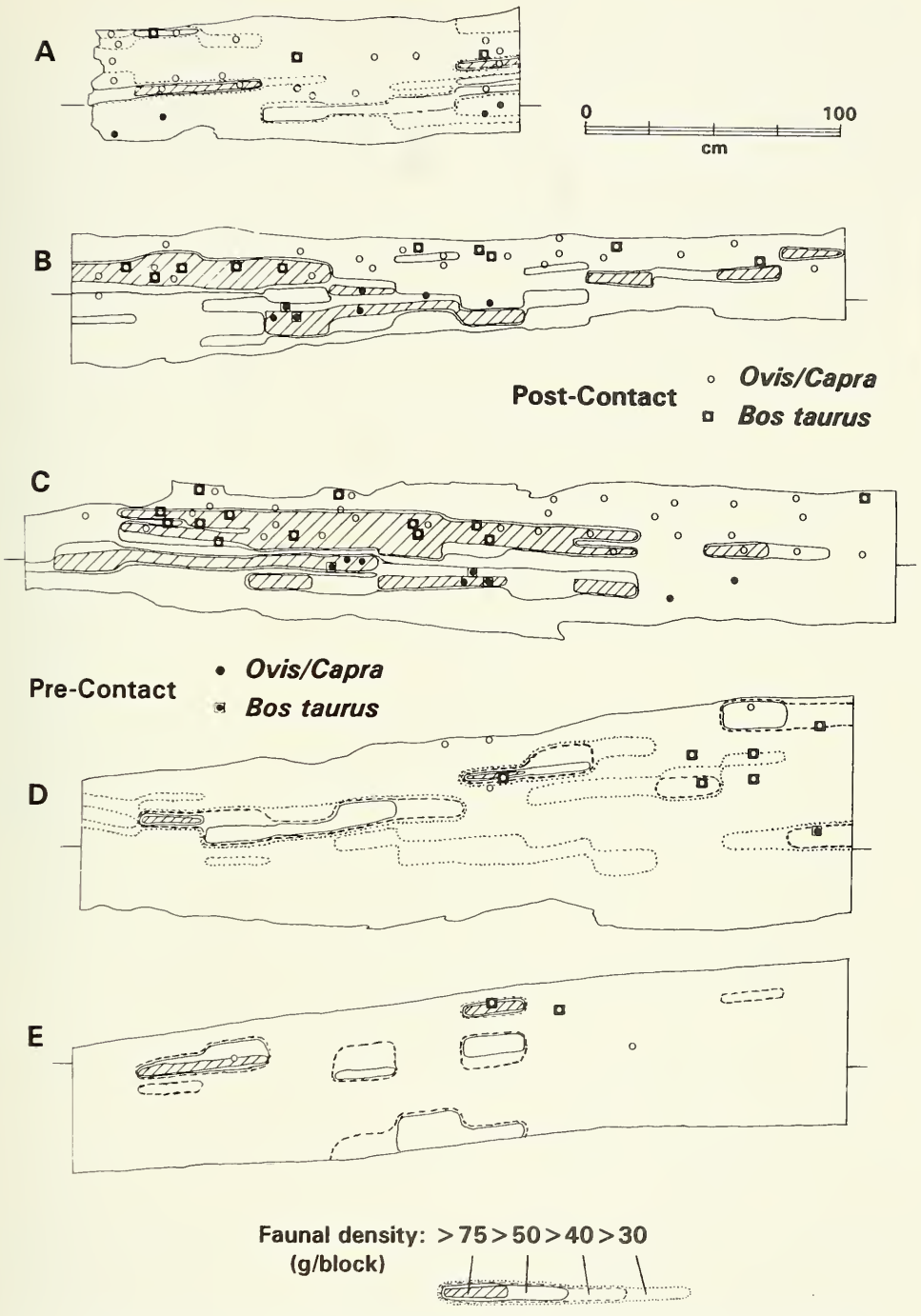

Fig. 6. Haaskraal Shelter and talus: composite sections showing positions of livestock by taxon, relative to lenses of dense (unsorted) fauna, termed bone middens.

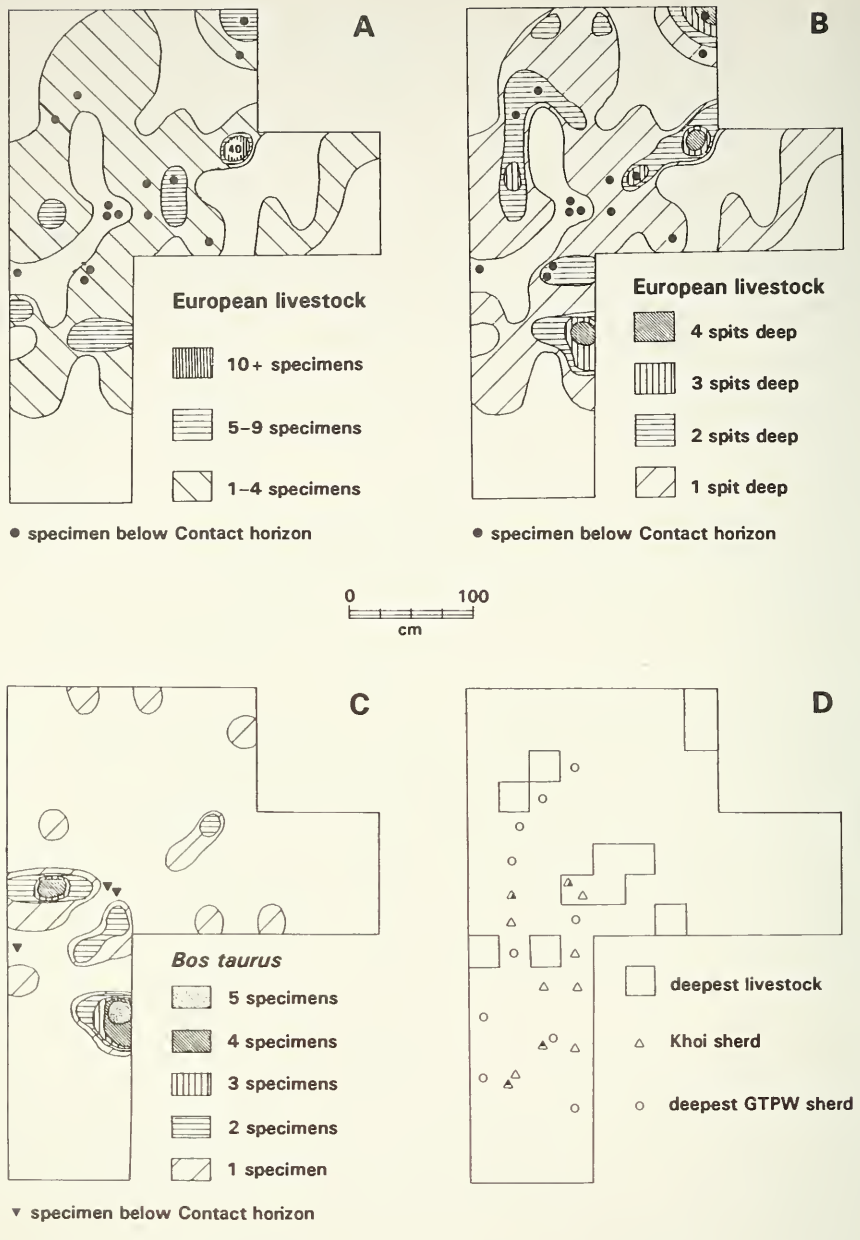

Fig. 7. Haaskraal Shelter. A. Horizontal positions of the deepest recovered livestock relative to variable density of overlying post-Contact livestock. B. Horizontal positions of the deepest recovered livestock relative to variable thickness of the overlying layer with post-Contact livestock. C. Horizontal positions of the deepest recovered cattle remains relative to variable density of overlying post-Contact cattle remains. D. Horizontal positions of the deepest recovered livestock relative to positions of selected pot sherds. GTPW = grass-tempered plain ware.

shelter. Specimens in the central cluster are distributed randomly underneath areas of high and low post-Contact livestock density. One of the outliers at the right rear of the excavation is positioned immediately below an isolated post-Contact concentration, which casts further doubt on its stratigraphic integrity, and that of its immediate neighbour. The other three specimens, selected for closer scrutiny in the previous exercise, are under relatively light-density areas (1–4 specimens per block).

In Figure 7B, their positions are shown relative to the depth of post-Contact livestock accumulations and, again, the right rear outlier is under an isolated, deep sequence. This further compromises its contextual validity, and that of its neighbour. The other three possibly suspect specimens all underlie shallow accumulations of post-Contact livestock.

As an additional cross-check, the distribution of pre-Contact cattle remains is compared with post-Contact cattle densities in Figure 7C. None of the three specimens is immediately below a post-Contact concentration, although they are in the general vicinity of the area with highest densities. By contrast, the solitary *Bos taurus* vertebra fragment from behind the kraal wall (Fig. 6D) occurs below a dense, deep accumulation of cattle fragments, a situation that casts considerable doubt on its position. Although it appears to be in a localized concentration, all of the surrounding material is highly comminuted bone splinters that contrast sharply with the size and condition of the specimen itself. This adds further to the burden of doubt hanging over the stratigraphic integrity of the specimen.

DISTRIBUTION OF LIVESTOCK AND EARLY CERAMICS

In Figure 8, the vertical positions of Khoi sherds and the lowermost fibre-tempered sherds are projected on to the same sections together with blocks containing pre-Contact livestock. There are no intermediate (MFCI) sherds. Also plotted are the positions of blocks with charcoal used for radiocarbon dating.

The sherds form a narrow, well-defined band within the shelter, and matching sherds display only minor vertical distribution within the band. In contrast to Volstruisfontein (Fig. 3A), there are no Khoi sherds displaced upwards, not even at the (suspect) rear of the shelter. This combines with the absence of downward-displaced European artefacts (Fig. 5) to suggest a relatively undisturbed shelter deposit, in spite of previous misgivings.

The radiocarbon date of 544 ± 43 BP (SMU–1636) is an excellent match with that from the equivalent cultural-stratigraphic position in Volstruisfontein. However, there is strong support for a 600-year hiatus in occupation at Haaskraal prior to this date. Whereas the two earlier dates at Haaskraal of 1180 ± 70 BP (SMU–1789) and 1140 ± 60 BP (SMU–1790) are good markers for the introduction of pottery (Fig. 8B, C), neither sample is well positioned to date the introduction of livestock.

The horizontal distribution of Khoi and early fibre-tempered sherds (Fig. 7D) displays little direct overlap with the positions of pre-Contact livestock, and there are more sherds in the forward position. The suspect *Ovis/Capra* molar and incisor from the right-rear of the excavation (Fig. 7A, B) are again notable because they fall completely outside the ceramic scatter.

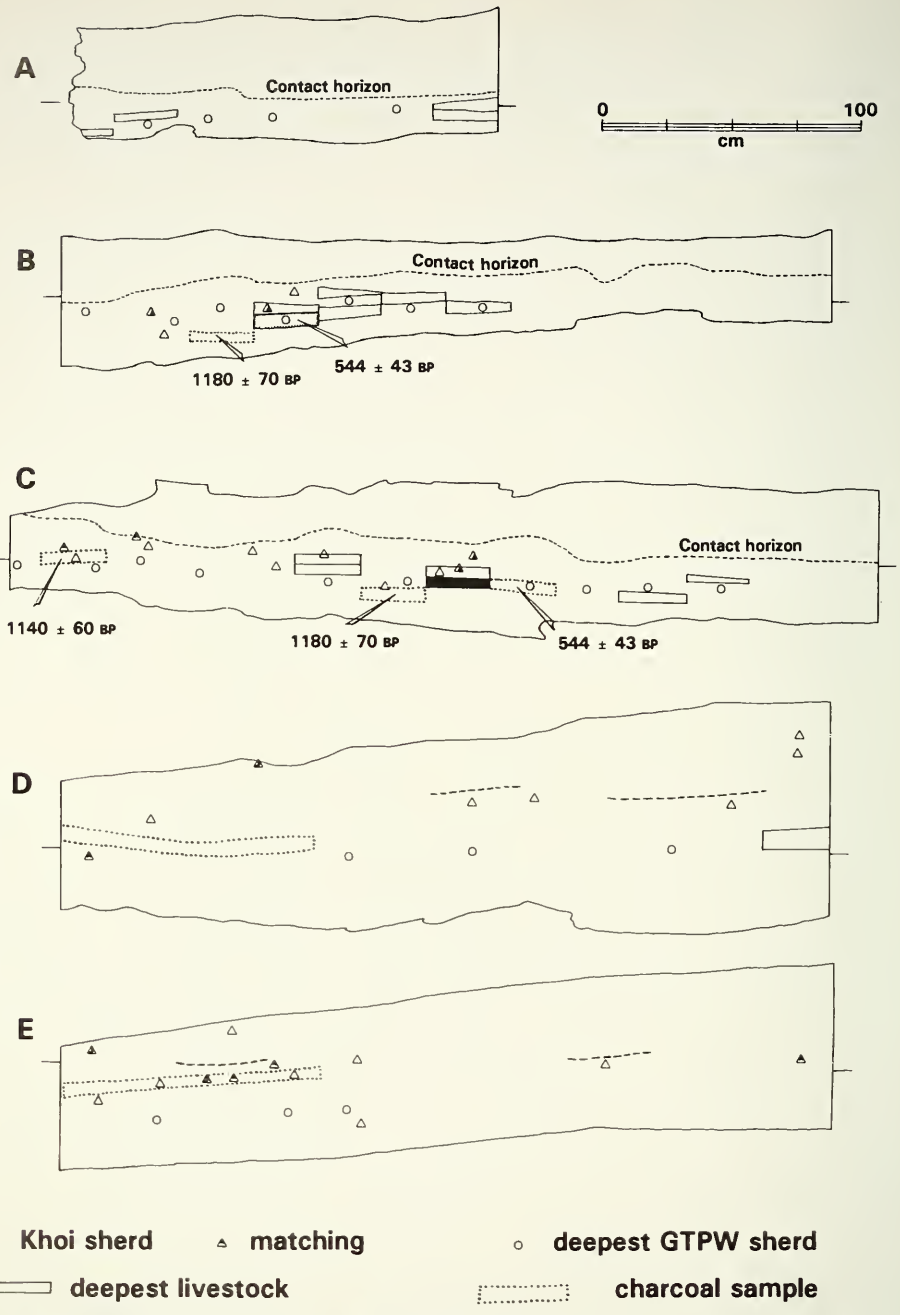

Fig. 8. Haaskraal Shelter and talus: composite sections showing positions of apparently pre-Contact livestock relative to selected pot sherds and dated charcoal samples. GTPW = grass-tempered plain ware. Black rectangle denotes position of AMS-dated specimens. Shaded areas in triangles denote matching sherds of specific vessels.

In the talus slope (Fig. 8D, E), the Khoi ceramic horizon appears vertically diffused because of the steeply sloping deposits. There are five specimens from well above the top of this band. On the left side of the excavation, two of these displaced sherds refit (triangle containing cross) and match a sherd from near the top of the main Khoi horizon below. That the deposit in this immediate area was churned is verified by a contaminated, near-modern radiocarbon date (SMU–1639) on charcoal taken from several blocks at the top of the Khoi horizon. Otherwise, the horizon itself has overall integrity, as shown by the matching sherds (black-top triangles) from its upper levels. These also correlate it convincingly to the top of the Khoi band near the front of the shelter (Fig. 8C).

On the right side of the talus excavation (Fig. 8D, E), where the suspect *Bos taurus* vertebra is located, the specimen is well positioned within the Khoi horizon, but there are two upward displaced Khoi sherds above it, further shrouding its context in doubt.

SUMMARY OF CRITERIA FOR SELECTING SAMPLES

The goal of this exercise is to select bone fragments with the least doubtful contexts, to be submitted for direct radiocarbon dating by the accelerator method. This is essential in the light of the revised dates (Sealy & Yates 1994) of apparently early, but actually intrusive sheep remains at other sites, dated only by conventional ^{14}C methods on associated charcoal.

Both shelters in this study are in an area with high concentrations of pre-European stock kraals, and they are the only sites out of nine excavated to yield plausible samples of domestic mammal remains from levels beneath their historical deposits. Like all the other tested shelters, they contain historical sheep and cattle bones in their upper levels, abandoned by late eighteenth- and nineteenth-century Bushmen, and by later occupants. Because they are both shallow and potentially churned deposits, there is a very real danger that the small samples from beneath the historical layers are derived from those layers, and will yield modern accelerator dates.

To evaluate the context of individual specimens, their positions were plotted to the nearest 25 cm × 25 cm horizontally and to the nearest 2.5 cm vertically. Positions were projected on to composite sections and compared with those of historical livestock, of European artefacts, of the earliest (assumed pastoralist) ceramics, of radiocarbon-dated charcoal samples, and of high-density faunal lenses, termed bone middens.

Criteria for suspecting the stratigraphic integrity of a specimen are as follows: (a) it occurs immediately below a dense, deep patch of historical livestock remains; (b) a European artefact has intruded from above into the specimen's vicinity; (c) visible disturbances such as unconformities or burrow outlines occur anywhere near the specimen; (d) Khoi (prehistoric pastoralist) sherds are found in the historical levels overlying the specimen; and (e) the specimen is not embedded in a bone midden with well-preserved pieces of non-domestic fauna, but is surrounded by thinly distributed bone splinters that contrast with its own preservation conditions.

The solitary candidate from Volstruisfontein is disqualified on all criteria except (e). The two isolated specimens from the back of Haaskraal Shelter are also rejected on criteria (a) and (e), and the solitary vertebra from behind the kraal wall must be passed over as it meets criteria (a), (d) and (e). Residual doubts cling to the other two outlying specimens at the back of Haaskraal Shelter because both meet criterion (e).

The central group of three *Bos taurus* and seven *Ovis aries* fragments do not fulfil any of these criteria and may, therefore, provide a reliable pool from which to draw direct dating samples. Conventional radiocarbon dating of charcoal from a contiguous block suggests that the earliest specimen is 500–600 years old, but another charcoal sample from the same level at the front of the shelter is *c.* 1 200 years old.

THE AMS DATES

To resolve this conflict, two specimens from the base of this cluster were selected and sent to the Oxford University Radiocarbon Accelerator Unit for AMS (Accelerator Mass Spectrometry) dating. They both came from the same block (E–12/8 in Table 1), shown in Figure 8C in black, bracketed between the two conventional charcoal dates. The results were:

OxA–4394	Bone	*Ovis aries*	$^{13}\delta C = -9.0$ per mil	410 ± 65 BP
OxA–4395	Tooth	*Bos taurus*	$^{13}\delta C = -13.5$ per mil	515 ± 65 BP

In both specimens, the fraction dated was the ion-exchanged gelatin and the dates are uncalibrated radiocarbon years. The OxfCal program gives calibrated ranges for the sheep bone of AD 1437–1519 and also of AD 1578–1626 at the 68.2 per cent confidence level, with a range of AD 1421–1641 at the 95.4 per cent confidence level. The same program gives calibrated ranges for the cattle tooth of AD 1315–1344 and of AD 1392–1456 at the 68.2 per cent confidence level, with ranges at the 95.4 per cent confidence level of AD 1299–1509 and AD 1600–1617.

CONCLUSIONS

The rigorous selection procedure produced positive results. The two dates are close enough to accept the contextual integrity of block E–12/8 itself, and the conventional charcoal date of 544 ± 43 BP from the block next to E–12/8 (Fig. 8C) is sound. Furthermore, the case for a *c.* 600-year-old disconformity running below the dated specimens is strengthened. Livestock was introduced to Haaskraal after this time gap, not before it. This is the first direct evidence for the presence of prehistoric sheep and cattle in the Upper Karoo. However, pottery was present here before the disconformity, as direct dates on fibre temper of ceramics have shown (Bollong *et al.* 1993). Livestock was present at the time that so-called Bushman pottery (stamp-impressed, fibre-tempered cooking bowls) was being made.

A case now exists for assuming that the lower cluster of 10 specimens (including the cattle remains) from Haaskraal is all of pre-Contact age and none

was intruded from the cattle-rich European material above. Also in the light of these results, the context of the lowermost sheep/goat specimen at Volstruisfontein (Fig. 3A) is vindicated as charcoal from the same level dates to 560 ± 170 BP.

The break between the top of the pre-Contact cluster in Haaskraal and the base of the historical livestock level is clear (Fig. 5A–C) and a similar break may now be inferred for Volstruisfontein (Fig. 3A–B). For a brief time, livestock stopped accumulating in both shelters. This supports archival sources that indicate the indigenous population had no livestock of their own at the time of the trekboer influx. That some Bushmen proved strikingly adept at herd management suggests that the duration of this gap could be less than a century.

Although AMS dates could be obtained for livestock specimens at the top of the pre-Contact cluster at Haaskraal, they would not yield usable results. Firstly, the expected standard error would be larger than the brief time lapse represented by this break in livestock deposition. Secondly, the mean date would fall so close to the troublesome 200 BP mark that too many calendric options would occur due to excessive wiggles in the calibration curve. Thus, the timing (and the cause) of the gap remain elusive.

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